

**METHOD AND SYSTEM FOR MANAGING HARDWARE RESOURCES  
TO IMPLEMENT SYSTEM FUNCTIONS USING AN ADAPTIVE  
COMPUTING ARCHITECTURE**

**ABSTRACT OF THE DISCLOSURE**

5           The present invention concerns a new category of integrated circuitry and a  
new methodology for adaptive or reconfigurable computing. The exemplary IC embodiment  
includes a plurality of heterogeneous computational elements coupled to an interconnection  
network. The plurality of heterogeneous computational elements include corresponding  
computational elements having fixed and differing architectures, such as fixed architectures  
10           for different functions such as memory, addition, multiplication, complex multiplication,  
subtraction, configuration, reconfiguration, control, input, output, and field programmability.  
In response to configuration information, the interconnection network is operative in real-  
time to configure and reconfigure the plurality of heterogeneous computational elements for a  
plurality of different functional modes, including linear algorithmic operations, non-linear  
15           algorithmic operations, finite state machine operations, memory operations, and bit-level  
manipulations. The various fixed architectures are selected to comparatively minimize power  
consumption and increase performance of the adaptive computing integrated circuit,  
particularly suitable for mobile, hand-held or other battery-powered computing applications.  
In an exemplary embodiment, some or all of the computational elements are alternately  
20           configured to implement two or more functions.

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